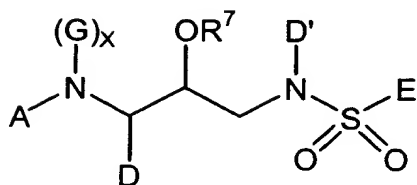


CLAIMS

We claim:

- 5 1. A compound of the formula (I):



(I)

and pharmaceutically acceptable salts thereof;  
wherein:

- 10 A is selected from H; Ht;  $-\text{R}^1\text{-Ht}$ ;  $-\text{R}^1\text{-C}_1\text{-C}_6$  alkyl, which is optionally substituted with one or more groups independently selected from hydroxy,  $-\text{CN}$ ,  $\text{C}_1\text{-C}_4$  alkoxy, Ht,  $-\text{O-Ht}$ ,  $-\text{NR}^2\text{-Ht}$ ,  $-\text{NR}^2\text{-CO-N(R}^2)_2$ ,  $-\text{SO}_2\text{-N(R}^2)_2$ ,  $-\text{SO}_2\text{-R}^2$  or  $-\text{CO-N(R}^2)_2$ ;  $-\text{R}^1\text{-C}_7\text{-C}_6$  alkenyl, which is optionally  
15 substituted with one or more groups independently selected from hydroxy,  $\text{C}_1\text{-C}_4$  alkoxy, Ht,  $-\text{O-Ht}$ ,  $-\text{NR}^2\text{-CO-N(R}^2)_2$  or  $-\text{CO-N(R}^2)_2$ ; or  $\text{R}^7$ ;

- each  $\text{R}^1$  is independently selected from  $-\text{C(O)-}$ ,  $-\text{S(O)}_2-$ ,  $-\text{C(O)-C(O)-}$ ,  $-\text{O-C(O)-}$ ,  $-\text{O-S(O)}_2-$ ,  $-\text{NR}^2-$ ,  
20  $-\text{NR}^2\text{-S(O)}_2-$ ,  $-\text{NR}^2\text{-C(O)-}$  or  $-\text{NR}^2\text{-C(O)-C(O)-}$ ;

- each Ht is independently selected from  $\text{C}_3\text{-C}_7$  cycloalkyl;  $\text{C}_5\text{-C}_7$  cycloalkenyl;  $\text{C}_6\text{-C}_{14}$  aryl; or a 5-7 membered saturated or unsaturated heterocycle, containing one or more heteroatoms selected from N,  $\text{N(R}^2)$ , O, S and  $\text{S(O)}_n$ ; wherein said aryl or said heterocycle is optionally  
25 fused to Q; and wherein any member of said Ht is optionally substituted with one or more substituents independently selected from oxo,  $-\text{OR}^2$ ,  $\text{SR}^2$ ,  $-\text{R}^2$ ,  $-\text{N(R}^2)(\text{R}^2)$ ,  $-\text{R}^2\text{-OH}$ ,  $-\text{CN}$ ,  $-\text{CO}_2\text{R}^2$ ,  $-\text{C(O)-N(R}^2)_2$ ,  $-\text{S(O)}_2\text{-N(R}^2)_2$ ,

Sub  
A2  
cont

-N(R<sup>2</sup>)-C(O)-R<sup>2</sup>, -N(R<sup>2</sup>)-C(O)O-R<sup>2</sup>, -C(O)-R<sup>2</sup>, -S(O)<sub>n</sub>-R<sup>2</sup>, -OCF<sub>3</sub>,  
-S(O)<sub>n</sub>-Q, methylenedioxy, -N(R<sup>2</sup>)-S(O)<sub>2</sub>(R<sup>2</sup>), halo, -CF<sub>3</sub>,  
-NO<sub>2</sub>, Q, -OQ, -OR<sup>7</sup>, -SR<sup>7</sup>, -R<sup>7</sup>, -N(R<sup>2</sup>)(R<sup>7</sup>) or -N(R<sup>7</sup>)<sub>2</sub>;

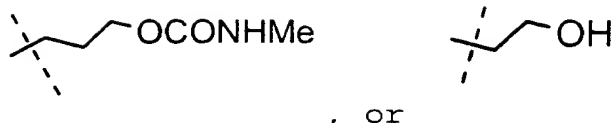
each R<sup>2</sup> is independently selected from H, or C<sub>1</sub>-C<sub>4</sub>  
5 alkyl optionally substituted with a 3-7 membered  
saturated, partially saturated or unsaturated carbocyclic  
ring system; or a 5-7 membered saturated, partially  
saturated or unsaturated heterocyclic ring containing one  
or more heteroatoms selected from O, N, S, S(O)<sub>n</sub> or  
10 N(R<sup>33</sup>); wherein any of said ring systems or N(R<sup>33</sup>) is  
optionally substituted with 1 to 4 substituents  
independently selected from -X'-Y', -O-arylalkyl,  
-S-arylalkyl, -N(Y')<sub>2</sub>, -N(H)-arylalkyl, -N(C<sub>1</sub>-C<sub>4</sub>  
alkyl)-arylalkyl, oxo, -O-(C<sub>1</sub>-C<sub>4</sub> alkyl), OH, C<sub>1</sub>-C<sub>4</sub> alkyl,  
15 -SO<sub>2</sub>H, -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>4</sub> alkyl), -SO<sub>2</sub>-NH<sub>2</sub>, -SO<sub>2</sub>-NH(C<sub>1</sub>-C<sub>4</sub> alkyl),  
-SO<sub>2</sub>-N(C<sub>1</sub>-C<sub>4</sub> alkyl)<sub>2</sub>, -NH<sub>2</sub>, -NH(C<sub>1</sub>-C<sub>4</sub> alkyl), -N(C<sub>1</sub>-C<sub>4</sub>  
alkyl)<sub>2</sub>, -NH-C(O)H, -N(C<sub>1</sub>-C<sub>4</sub> alkyl)-C(O)H, -NH-C(O)-C<sub>1</sub>-C<sub>4</sub>  
alkyl, -C<sub>1</sub>-C<sub>4</sub> alkyl-OH, -OH, -CN, -C(O)OH, -C(O)O-C<sub>1</sub>-C<sub>4</sub>  
alkyl, -C(O)-NH<sub>2</sub>, -C(O)-NH(C<sub>1</sub>-C<sub>4</sub> alkyl), -C(O)-N(C<sub>1</sub>-C<sub>4</sub>  
20 alkyl)<sub>2</sub>, halo or -CF<sub>3</sub>;

X' is -O-, -S-, -NH-, -NHC(O)-, -NHC(O)O-, -NHSO<sub>2</sub>-,  
or -N(C<sub>1</sub>-C<sub>4</sub>)alkyl-;

Y' is C<sub>1</sub>-C<sub>15</sub> alkyl, C<sub>2</sub>-C<sub>15</sub> alkenyl or alkynyl, wherein  
one to five carbon atoms in Y are optionally substituted  
25 with C<sub>3</sub>-C<sub>7</sub> cycloalkyl or C<sub>5</sub>-C<sub>6</sub> cycloalkenyl, C<sub>6</sub>-C<sub>14</sub> aryl or  
a 5-7 membered saturated or unsaturated heterocycle,  
containing one or more heteroatoms selected from N, NH,  
O, S and S(O)<sub>n</sub>;

each R<sup>3</sup> is independently selected from H, Ht, C<sub>1</sub>-C<sub>6</sub>  
30 alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl, C<sub>2</sub>-C<sub>6</sub> alkynyl, C<sub>3</sub>-C<sub>6</sub> cycloalkyl or  
C<sub>5</sub>-C<sub>6</sub> cycloalkenyl; wherein any member of said R<sup>3</sup>, except  
H, is optionally substituted with one or more

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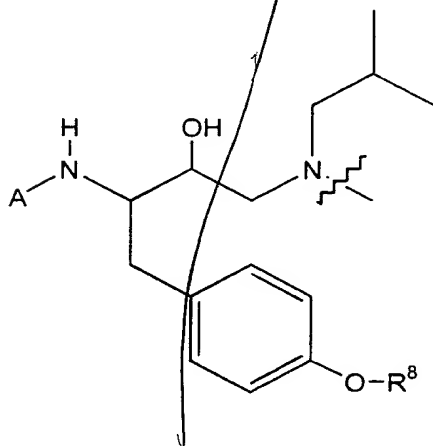


Sub  
#2  
cont

The compounds according to the invention  
 contain one or more asymmetric carbon atoms and thus  
 occur as racemates and racemic mixtures, single  
 enantiomers, diastereomeric mixtures and individual  
 diastereomers. All such isomeric forms of these  
 compounds are expressly included in the present  
 invention. Each stereogenic carbon may be of the R or S  
 configuration. Although the specific compounds  
 exemplified in this application may be depicted in a  
 particular stereochemical configuration, compounds having  
 either the opposite stereochemistry at any given chiral  
 center or mixtures thereof are also envisioned.

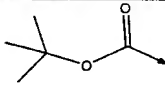
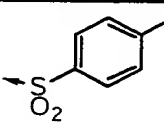
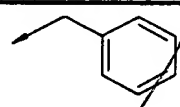
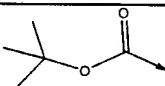
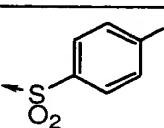
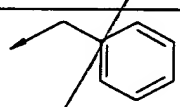
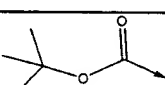
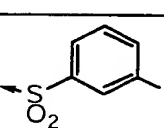
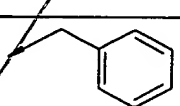
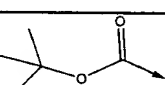
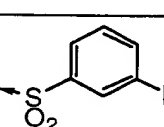
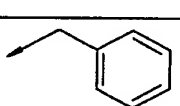
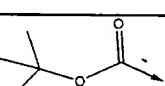
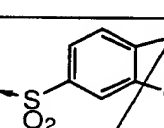
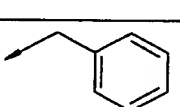
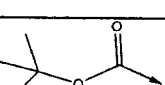
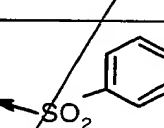
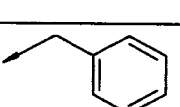
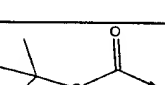
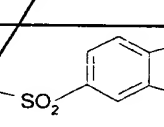
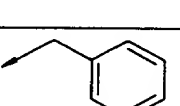
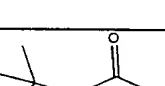
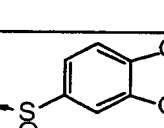
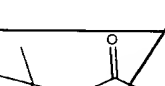
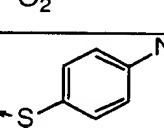
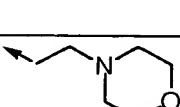

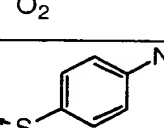
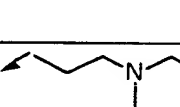
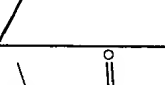
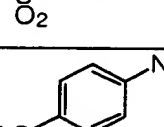
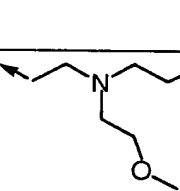
Specific preferred compounds of the present  
 invention are set forth below in Tables 1, 2 and 3. The  
 arrows in Tables 1 and 2, and the dotted lines in Table 3  
 indicate where the indicated moiety attaches to the rest  
 of the molecule.

Table 1:



Sub  
Any  
and

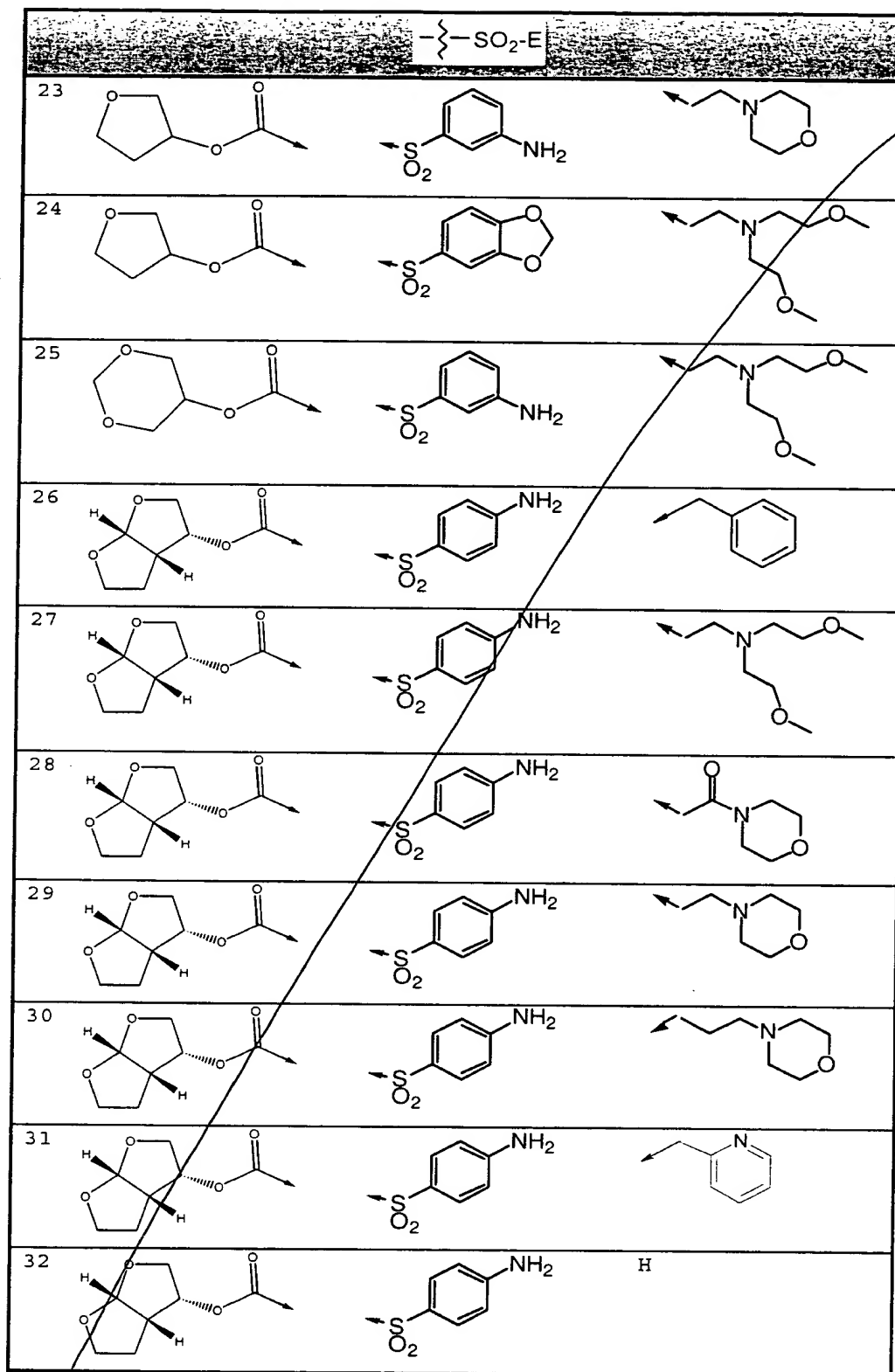
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	A	-SO <sub>2</sub> -E	R
5a			
5b			
5c			
5d			
5e			
5f			
5g			
6e			H
10			
11			
12			

Sub  
A2  
cont

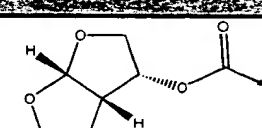
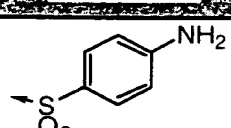
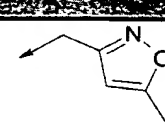
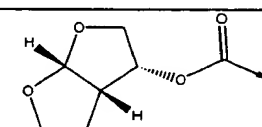
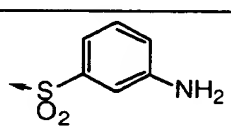
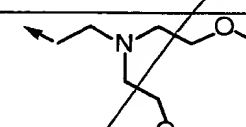
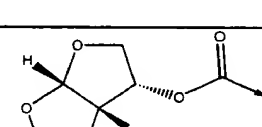
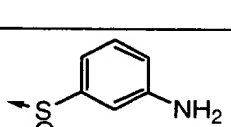
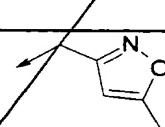
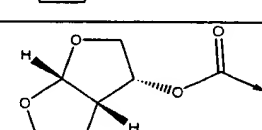
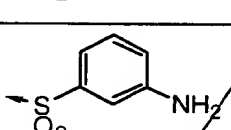
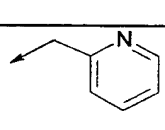
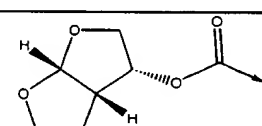
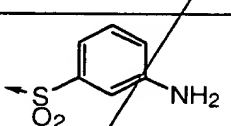
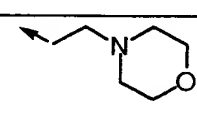
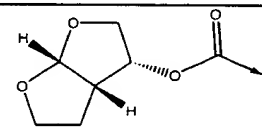
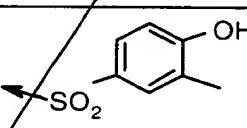
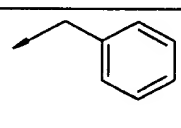
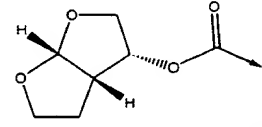
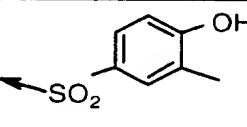
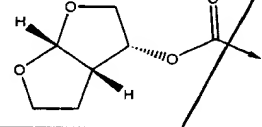
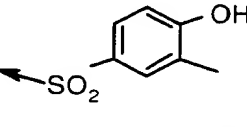
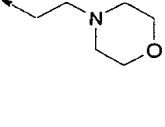
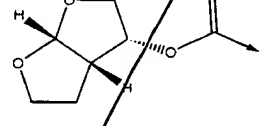
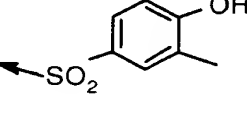
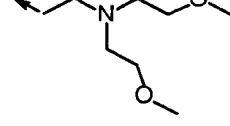
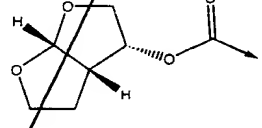
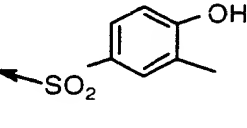
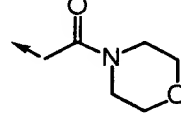
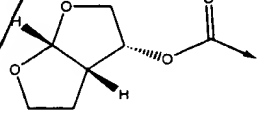
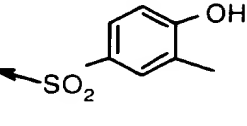
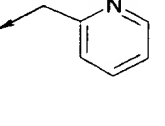
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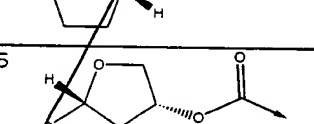
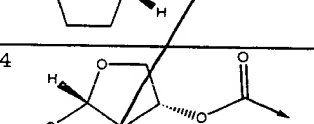
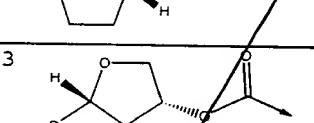
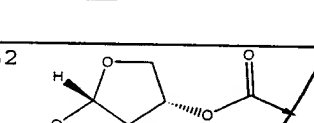
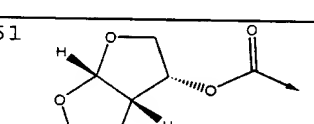
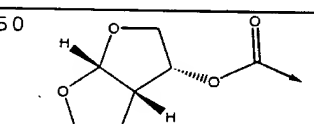
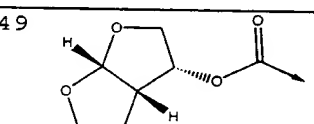
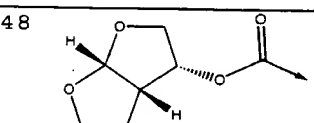
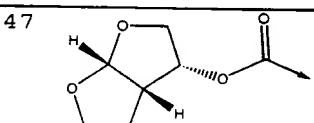
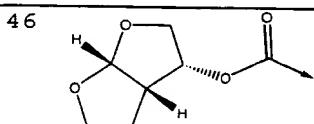
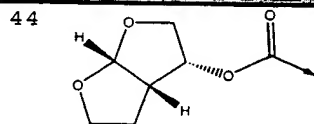
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$\text{---}\{\text{---SO}_2\text{---E}\}$			
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Variable	Mean	Standard Deviation	Minimum	Maximum
Age	34.5	10.2	21	55
Gender	0.5	0.5	0	1
Marital Status	0.6	0.5	0	1
Education	12.5	1.5	9	16
Income	35000	15000	10000	70000
Health	0.8	0.2	0	1
Stress	0.7	0.3	0	1
Depression	0.4	0.5	0	1
Loneliness	0.6	0.5	0	1
Life Satisfaction	0.5	0.5	0	1
Resilience	0.6	0.4	0	1
Optimism	0.7	0.4	0	1
Gratitude	0.6	0.5	0	1
Forgiveness	0.5	0.5	0	1
Empathy	0.6	0.4	0	1
Compassion	0.5	0.5	0	1
Kindness	0.6	0.4	0	1
Generosity	0.5	0.5	0	1
Patience	0.6	0.4	0	1
Self-control	0.5	0.5	0	1
Perseverance	0.6	0.4	0	1
Endurance	0.5	0.5	0	1
Stamina	0.6	0.4	0	1
Strength	0.5	0.5	0	1
Power	0.6	0.4	0	1
Influence	0.5	0.5	0	1
Authority	0.6	0.4	0	1
Leadership	0.5	0.5	0	1
Management	0.6	0.4	0	1
Organization	0.5	0.5	0	1
Planning	0.6	0.4	0	1
Execution	0.5	0.5	0	1
Completion	0.6	0.4	0	1
Success	0.5	0.5	0	1
Accomplishment	0.6	0.4	0	1
Achievement	0.5	0.5	0	1
Realization	0.6	0.4	0	1
Fulfillment	0.5	0.5	0	1
Satisfaction	0.6	0.4	0	1
Contentment	0.5	0.5	0	1
Peace	0.6	0.4	0	1
Harmony	0.5	0.5	0	1
Balance	0.6	0.4	0	1
Stability	0.5	0.5	0	1
Consistency	0.6	0.4	0	1
Reliability	0.5	0.5	0	1
Trustworthiness	0.6	0.4	0	1
Honesty	0.5	0.5	0	1
Integrity	0.6	0.4	0	1
Character	0.5	0.5	0	1
Reputation	0.6	0.4	0	1
Image	0.5	0.5	0	1
Brand	0.6	0.4	0	1
Identity	0.5	0.5	0	1
Personality	0.6	0.4	0	1
Style	0.5	0.5	0	1
Taste	0.6	0.4	0	1
Preference	0.5	0.5	0	1
Choice	0.6	0.4	0	1
Decision	0.5	0.5	0	1
Action	0.6	0.4	0	1
Behavior	0.5	0.5	0	1
Conduct	0.6	0.4	0	1
Performance	0.5	0.5	0	1
Output	0.6	0.4	0	1
Product	0.5	0.5	0	1
Service	0.6	0.4	0	1
Quality	0.5	0.5	0	1
Value	0.6	0.4	0	1
Meaning	0.5	0.5	0	1
Purpose	0.6	0.4	0	1
Goal	0.5	0.5	0	1
Objective	0.6	0.4	0	1
Target	0.5	0.5	0	1
Result	0.6	0.4	0	1
Outcome	0.5	0.5	0	1
Effect	0.6	0.4	0	1
Impact	0.5	0.5	0	1
Influence	0.6	0.4	0	1
Power	0.5	0.5	0	1
Authority	0.6	0.4	0	1
Leadership	0.5	0.5	0	1
Management	0.6	0.4	0	1
Organization	0.5	0.5	0	1
Planning	0.6	0.4	0	1
Execution	0.5	0.5	0	1
Completion	0.6			



substituents selected from  $-OR^2$ ,  $-C(O)-N(R^2)_2$ ,  
-S(O)<sub>n</sub>-N(R<sup>2</sup>)<sub>2</sub>, -N(R<sup>2</sup>)<sub>2</sub>, -N(R<sup>2</sup>)-C(O)O(R<sup>2</sup>), -N(R<sup>2</sup>)-C(O)N(R<sup>2</sup>)<sub>2</sub>,  
-N(R<sup>2</sup>)-C(O)-R<sup>2</sup>, Ht, -CN, -SR<sup>2</sup>, -C(O)OR<sup>2</sup>, N(R<sup>2</sup>)-C(O)-R<sup>2</sup>;

each R<sup>33</sup> is selected from H, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub>  
5 alkenyl, C<sub>2</sub>-C<sub>6</sub> alkynyl, C<sub>3</sub>-C<sub>6</sub> cycloalkyl or C<sub>5</sub>-C<sub>6</sub>  
cycloalkenyl, C<sub>6</sub>-C<sub>14</sub> aryl or a 5-7 membered saturated or  
unsaturated heterocycle, containing one or more  
heteroatoms selected from N, NH, O, S and S(O)<sub>n</sub>;

each n is independently 1 or 2;

10 G, when present, is selected from H, R<sup>7</sup> or C<sub>1</sub>-C<sub>4</sub>  
alkyl, or, when G is C<sub>1</sub>-C<sub>4</sub> alkyl, G and R<sup>7</sup> are bound to one  
another either directly or through a C<sub>1</sub>-C<sub>3</sub> linker to form  
a heterocyclic ring; or

when G is not present (i.e., when x in (G)<sub>x</sub> is 0),  
15 then the nitrogen to which G is attached is bound  
directly to the R<sup>7</sup> group in -OR<sup>7</sup> with the concomitant  
displacement of one -ZM group from R<sup>7</sup>;

D is selected from C<sub>1</sub>-C<sub>6</sub> alkyl which is substituted  
with Q, which is optionally substituted with one or more  
20 groups selected from C<sub>3</sub>-C<sub>6</sub> cycloalkyl, -R<sup>3</sup>, -O-Q or Q;  
C<sub>2</sub>-C<sub>4</sub> alkenyl which is substituted with Q, which is  
optionally substituted with one or more groups selected  
from -OR<sup>2</sup>, -S-Ht, -R<sup>3</sup>, -O-Q or Q; C<sub>3</sub>-C<sub>6</sub> cycloalkyl, which  
is optionally substituted with or fused to Q; or C<sub>5</sub>-C<sub>6</sub>  
25 cycloalkenyl, which is optionally substituted with or  
fused to Q;

each Q is independently selected from a 3-7 membered  
saturated, partially saturated or unsaturated carbocyclic  
ring system; or a 5-7 membered saturated, partially  
30 saturated or unsaturated heterocyclic ring containing one  
or more heteroatoms selected from O, N, S, S(O)<sub>n</sub> or N(R<sup>2</sup>);  
wherein Q contains one substituent selected from -OR<sup>2</sup>, -

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OR<sup>8</sup>, -O-arylalkyl, -SR<sup>8</sup>, -S-arylalkyl, -N(R<sup>2</sup>)R<sup>8</sup>, -  
N(R<sup>2</sup>)-arylalkyl and may be optionally substituted with one  
or more additional substituents independently selected  
from oxo, -OR<sup>8</sup>, -O-arylalkyl -SR<sup>8</sup>, -S-arylalkyl, -N(R<sup>2</sup>)R<sup>8</sup>,  
-N(R<sup>2</sup>)-arylalkyl, -OR<sup>2</sup>, -R<sup>2</sup>, -SO<sub>2</sub>R<sup>2</sup>, -SO<sub>2</sub>-N(R<sup>2</sup>)<sub>2</sub>, -N(R<sup>2</sup>)<sub>2</sub>,  
-N(R<sup>2</sup>)-C(O)-R<sup>2</sup>, -OH, (C<sub>1</sub>-C<sub>4</sub>)-OH, -CN, -CO<sub>2</sub>R<sup>2</sup>, -C(O)-N(R<sup>2</sup>)<sub>2</sub>,  
halo or -CF<sub>3</sub>;

each R<sup>8</sup> is independently selected from Ht, -C<sub>1</sub>-C<sub>15</sub>  
branched or straight chain alkyl, alkenyl or alkynyl  
wherein one to five carbon atoms in said alkyl, alkenyl  
or alkynyl are independently replaced by W, or wherein  
one to five carbon atoms in said alkyl, alkenyl or  
alkynyl are substituted with Ht; and wherein R<sup>8</sup> is  
additionally and optionally substituted with one or more  
groups independently selected from -OH, -S(C<sub>1</sub>-C<sub>6</sub> alkyl), -  
CN, -CF<sub>3</sub>, -N(R<sup>2</sup>)<sub>2</sub>, halo, -C<sub>1</sub>-C<sub>4</sub>-alkyl, -C<sub>1</sub>-C<sub>4</sub>-alkoxy; -Ht;  
-O-Ht; -NR<sup>2</sup>-CO-N(R<sup>2</sup>)<sub>2</sub>; -CO-N(R<sup>2</sup>)<sub>2</sub>; -R<sup>1</sup>-C<sub>2</sub>-C<sub>6</sub> alkenyl, which  
is optionally substituted with one or more groups  
independently selected from hydroxy, C<sub>1</sub>-C<sub>4</sub> alkoxy, Ht,  
-O-Ht, -NR<sup>2</sup>-CO-N(R<sup>2</sup>)<sub>2</sub> or -CO-N(R<sup>2</sup>)<sub>2</sub>; or R<sup>7</sup>;

wherein W is -O-, -NR<sup>2</sup>-, -S-, -C(O)-, -C(S)-,  
-C(=NR<sup>2</sup>)-, -S(O)<sub>2</sub>-, -NR<sup>2</sup>-S(O)<sub>2</sub>-, -S(O)<sub>2</sub>-NR<sup>2</sup>-, -NR<sup>2</sup>-C(O)O-, -  
O-C(O)NR<sup>2</sup>-, -NR<sup>2</sup>-C(O)NR<sup>2</sup>-, -NR<sup>2</sup>-C(S)NR<sup>2</sup>-, -CONR<sup>2</sup>, -NR<sup>2</sup>C(O)-,  
-C(S)NR<sup>2</sup>, -NR<sup>2</sup>C(S)-, -NR<sup>2</sup>-C(=N-CN)-NR<sup>2</sup>-, -NR<sup>2</sup>C(=N-CN)O- or  
-C(O)O-;

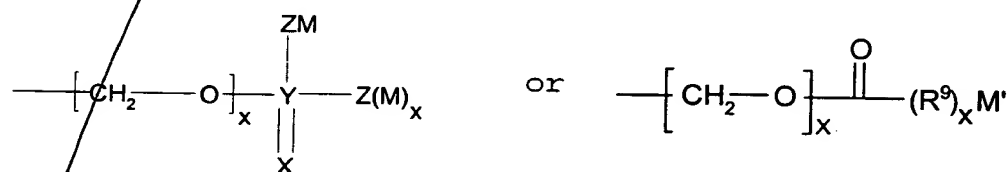
D' is selected from C<sub>1</sub>-C<sub>15</sub> alkyl, C<sub>1</sub>-C<sub>15</sub> alkoxy, C<sub>2</sub>-C<sub>15</sub>  
alkenyl, C<sub>2</sub>-C<sub>15</sub> alkenyloxy, C<sub>2</sub>-C<sub>15</sub> alkynyl, or C<sub>2</sub>-C<sub>15</sub>  
alkynyloxy, wherein D' optionally comprises one or more  
substituents independently selected from Ht, oxo, halo,  
-CF<sub>3</sub>, -OCF<sub>3</sub>, -NO<sub>2</sub>, azido, -SH, -SR<sup>3</sup>, -N(R<sup>3</sup>)-N(R<sup>3</sup>)<sub>2</sub>,  
-O-N(R<sup>3</sup>)<sub>2</sub>, -(R<sup>3</sup>)N-O-(R<sup>3</sup>), -N(R<sup>3</sup>)<sub>2</sub>, -CN, -CO<sub>2</sub>R<sup>3</sup>, -C(O)-N(R<sup>3</sup>)<sub>2</sub>,  
-S(O)<sub>n</sub>-N(R<sup>3</sup>)<sub>2</sub>, -N(R<sup>3</sup>)-C(O)-R<sup>3</sup>, -N(R<sup>3</sup>)-C(O)-N(R<sup>3</sup>)<sub>2</sub>, -C(O)-R<sup>3</sup>,

$-S(O)_n-R^3$ ,  $-N(R^3)-S(O)_n(R^3)$ ,  $-N(R^3)-S(O)_n-N(R^3)_2$ ,  
 $-S-NR^3-C(O)R^3$ ,  $-C(S)N(R^3)_2$ ,  $-C(S)R^3$ ,  $-NR^3-C(O)OR^3$ ,  
 $-O-C(O)OR^3$ ,  $-O-C(O)N(R^3)_2$ ,  $-NR^3-C(S)R^3$ ,  $=N-OH$ ,  $=N-OR^3$ ,  
 $=N-N(R^3)_2$ ,  $=NR^3$ ,  $=NNR^3C(O)N(R^3)_2$ ,  $=NNR^3C(O)OR^3$ ,  
 $=NNR^3S(O)_n-N(R^3)_2$ ,  $-NR^3-C(S)OR^3$ ,  $-NR^3-C(S)N(R^3)_2$ ,  
 $-NR^3-C[=N(R^3)]-N(R^3)_2$ ,  $-N(R^3)-C[=N-NO_2]-N(R^3)_2$ ,  
 $-N(R^3)-C[=N-NO_2]-OR^3$ ,  $-OC(O)R^3$ ,  $-OC(S)R^3$ ,  $-OC(O)N(R^3)_2$ ,  
 $-C(O)N(R^3)-N(R^3)_2$ ,  $-N(R^3)-N(R^3)C(O)R^3$ ,  $-N(R^3)-OC(O)R^3$ ,  
 $-N(R^3)-OC(O)R^3$ ,  $-N(R^3)-OC(O)R^3$ ,  $-OC(S)N(R^3)_2$ ,  
 $-OC(S)N(R^3)(R^3)$ , or  $-PO_3-R^3$ ;

E is selected from Ht; O-Ht; Ht-Ht; Ht fused with  
 Ht;  $-O-R^3$ ;  $-N(R^2)(R^3)$ ;  $-N(R^2)-Ht$ ;  $C_1-C_6$  alkyl, which is  
 optionally substituted with one or more groups selected  
 from  $R^4$  or Ht;  $C_2-C_6$  alkenyl, which is optionally  
 substituted with one or more groups selected from  $R^4$  or  
 Ht;  $C_3-C_6$  saturated carbocycle, which is optionally  
 substituted with one or more groups selected from  $R^4$  or  
 Ht; or  $C_5-C_6$  unsaturated carbocycle, which is optionally  
 substituted with one or more groups selected from  $R^4$  or  
 Ht;

each  $R^4$  is independently selected from  $-R^2$ ,  $-OR^2$ ,  
 $-OR^3$ ,  $-SR^2$ ,  $-SOR^2$ ,  $-SO_2R^2$ ,  $-CO_2R^2$ ,  $-OC(O)-R^2$ ,  $-C(O)-N(R^2)_2$ ,  
 $-C(O)-NR^2(OR^2)$ ,  $-S(O)_2-N(R^2)_2$ , halo,  $-NR^2-C(O)-R^2$ ,  $-NR^2-OR^2$ ,  
 $-N(R^2)_2$  or  $-CN$ ;

each  $R^7$  is independently selected from hydrogen,



wherein each M is independently selected

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5 from H, Li, Na, K, Mg, Ca, Ba,  $-N(R^2)_4$ ,  $C_1$ - $C_{12}$ -alkyl,  
 $C_2$ - $C_{12}$ -alkenyl, or  $-R^6$ ; wherein 1 to 4  $-CH_2$  radicals of the  
alkyl or alkenyl group, other than the  $-CH_2$  that is bound  
to Z, is optionally replaced by a heteroatom group  
selected from O, S,  $S(O)$ ,  $S(O)_2$ , or  $N(R^2)$ ; and wherein any  
hydrogen in said alkyl, alkenyl or  $R^6$  is optionally  
replaced with a substituent selected from oxo,  
 $-C_1$ - $C_4$  alkyl,  $-N(R^2)_2$ ,  $-N(R^2)_3$ ,  $-OH$ ,  $-O-(C_1-C_4$  alkyl),  $-CN$ ,  
 $-C(O)OR^2$ ,  $-C(O)-N(R^2)_2$ ,  $S(O)_2-N(R^2)_2$ ,  $-N(R^2)-C(O)-R_2$ ,  
10  $C(O)R^2$ ,  $-S(O)_n-R^2$ ,  $-OCF_3$ ,  $-S(O)_n-R^6$ ,  $-N(R^2)-S(O)_2(R^2)$ , halo,  
 $-CF_3$ , or  $-NO_2$ ;

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15  $M'$  is H,  $C_1$ - $C_{12}$ -alkyl,  $C_2$ - $C_{12}$ -alkenyl, or  $-R^6$ ; wherein  
1 to 4  $-CH_2$  radicals of the alkyl or alkenyl group is  
optionally replaced by a heteroatom group selected from  
O, S,  $S(O)$ ,  $S(O)_2$ , or  $N(R^2)$ ; and wherein any hydrogen in  
said alkyl, alkenyl or  $R^6$  is optionally replaced with a  
substituent selected from oxo,  $-OR^2$ ,  $-C_1$ - $C_4$  alkyl,  $-N(R^2)_2$ ,  
 $N(R^2)_3$ ,  $-OH$ ,  $-O-(C_1-C_4$  alkyl),  $-CN$ ,  $-C(O)OR^2$ ,  $-C(O)-N(R^2)_2$ ,  
 $-S(O)_2-N(R^2)_2$ ,  $-N(R^2)-C(O)-R_2$ ,  $-C(O)R^2$ ,  $-S(O)_n-R^2$ ,  $-OCF_3$ ,  
20  $-S(O)_n-R^6$ ,  $-N(R^2)-S(O)_2(R^2)$ , halo,  $-CF_3$ , or  $-NO_2$ ;

x is 0 or 1;

Z is O, S,  $N(R^2)_2$ , or, when M is not present, H.

Y is P or S;

X is O or S; and

25  $R^9$  is  $C(R^2)_2$ , O or  $N(R^2)$ ; and wherein when Y is S, Z  
is not S; and

30  $R^6$  is a 5-6 membered saturated, partially saturated  
or unsaturated carbocyclic or heterocyclic ring system,  
or an 8-10 membered saturated, partially saturated or  
unsaturated bicyclic ring system; wherein any of said  
heterocyclic ring systems contains one or more  
heteroatoms selected from O, N, S,  $S(O)_n$  or  $N(R^2)$ ; and

wherein any of said ring systems optionally contains 1 to 4 substituents independently selected from -OH, -C<sub>1</sub>-C<sub>4</sub> alkyl, -O-(C<sub>1</sub>-C<sub>4</sub> alkyl) or -O-C(O)-(C<sub>1</sub>-C<sub>4</sub> alkyl).

2. The compound according to claim 1, wherein R<sup>8</sup> is -C<sub>1</sub>-C<sub>4</sub>-branched or straight chain alkyl, wherein one to two carbon atoms in said alkyl are independently replaced by W, wherein R<sup>8</sup> is additionally and optionally substituted with one or more groups independently selected from -OH; -C<sub>1</sub>-C<sub>4</sub>-alkoxy; -Ht; -O-Ht; -NR<sup>2</sup>-CO-N(R<sup>2</sup>)<sub>2</sub>; -CO-N(R<sup>2</sup>)<sub>2</sub>; -R<sup>1</sup>-C<sub>2</sub>-C<sub>6</sub> alkenyl, which is optionally substituted with one or more groups independently selected from hydroxy, C<sub>1</sub>-C<sub>4</sub> alkoxy, Ht, -O-Ht, -NR<sup>2</sup>-CO-N(R<sup>2</sup>)<sub>2</sub> or -CO-N(R<sup>2</sup>)<sub>2</sub>; or R<sup>7</sup>;

wherein W is -O-, -NR<sup>2</sup>-, -NR<sup>2</sup>-S(O)<sub>2</sub>-, -NR<sup>2</sup>-C(O)O-, -O-C(O)NR<sup>2</sup>-, -NR<sup>2</sup>-C(O)NR<sup>2</sup>-, -NR<sup>2</sup>-C(S)NR<sup>2</sup>-, -NR<sup>2</sup>C(O)-, -C(=NR<sup>2</sup>)-, -C(O)NR<sup>2</sup>-, -NR<sup>2</sup>-C(=N-CN)-NR<sup>2</sup>-, -NR<sup>2</sup>C(=N-CN)O- or -C(O)O-; and

wherein Ht, R<sup>1</sup>, R<sup>2</sup> and R<sup>7</sup> are as defined in claim 1.

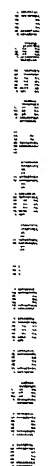
3. The compound according to claim 1, wherein R<sup>8</sup> is a -C<sub>1</sub>-C<sub>4</sub>-branched or straight alkyl chain, wherein one to two carbon atoms are substituted with Ht;

wherein Ht is C<sub>6-14</sub> aryl or a 5-7 membered saturated or unsaturated heterocycle, containing one or more heteroatoms selected from N, N(R<sup>2</sup>), O, S and S(O)<sub>n</sub>, wherein any member of Ht is optionally substituted with one or more substituents independently selected from oxo, -OR<sup>2</sup>, SR<sup>2</sup>, -R<sup>2</sup>, -N(R<sup>2</sup>)(R<sup>2</sup>), -R<sup>2</sup>-OH, -CN, -CO<sub>2</sub>R<sup>2</sup>, -C(O)-N(R<sup>2</sup>)<sub>2</sub>, -S(O)<sub>2</sub>-N(R<sup>2</sup>)<sub>2</sub>, -N(R<sup>2</sup>)-C(O)-R<sup>2</sup>, -N(R<sup>2</sup>)-C(O)O-R<sup>2</sup>, -C(O)-R<sup>2</sup>, -S(O)<sub>n</sub>-R<sup>2</sup>, -OCF<sub>3</sub>, -S(O)<sub>n</sub>-Q, methylenedioxy,

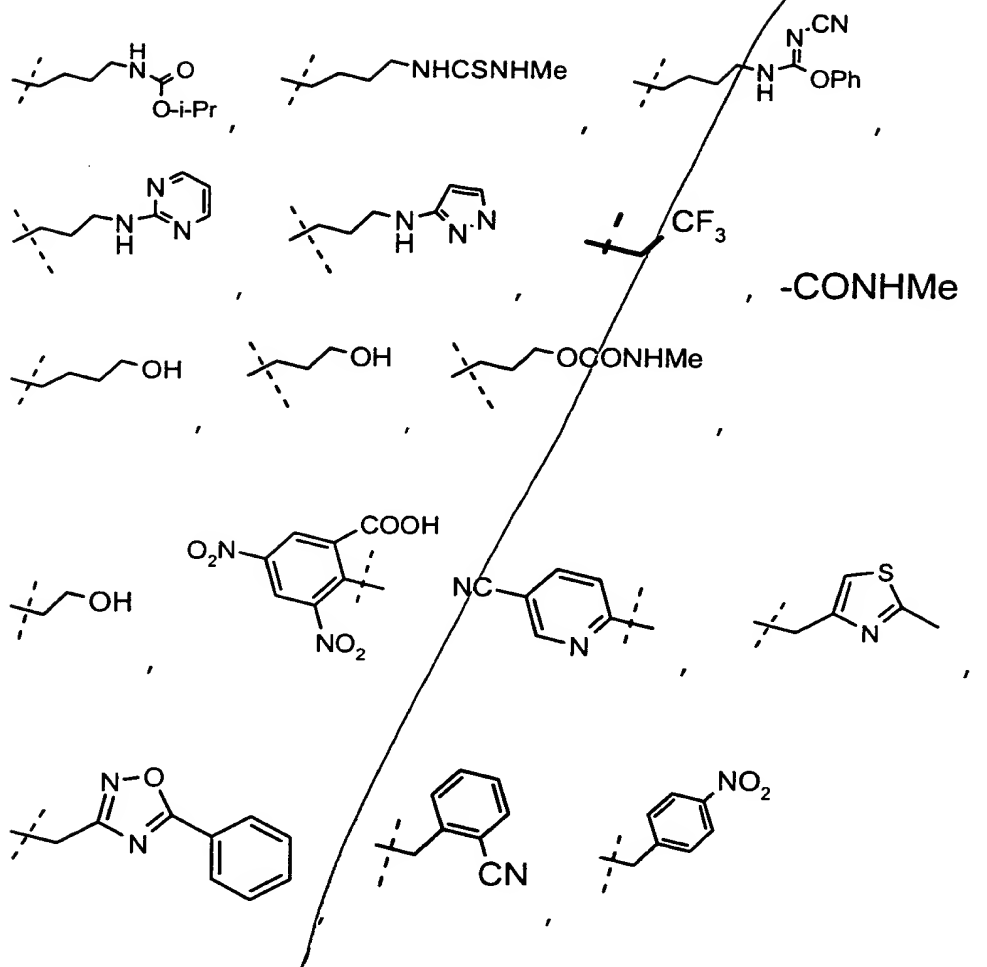
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4. The compound according to claim/1, wherein R<sup>8</sup> is  
5 selected from:

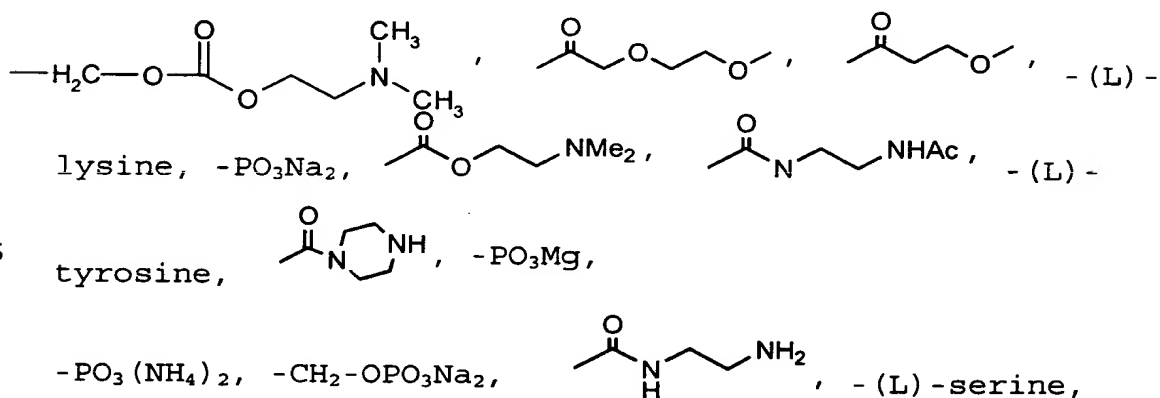


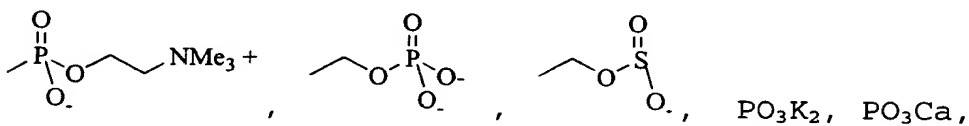
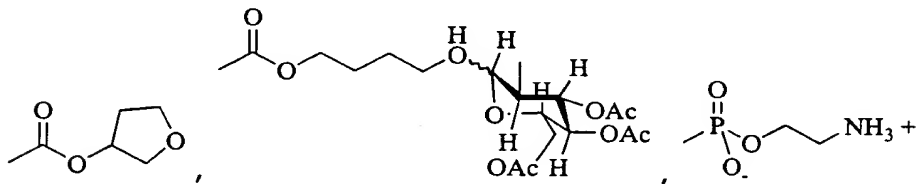
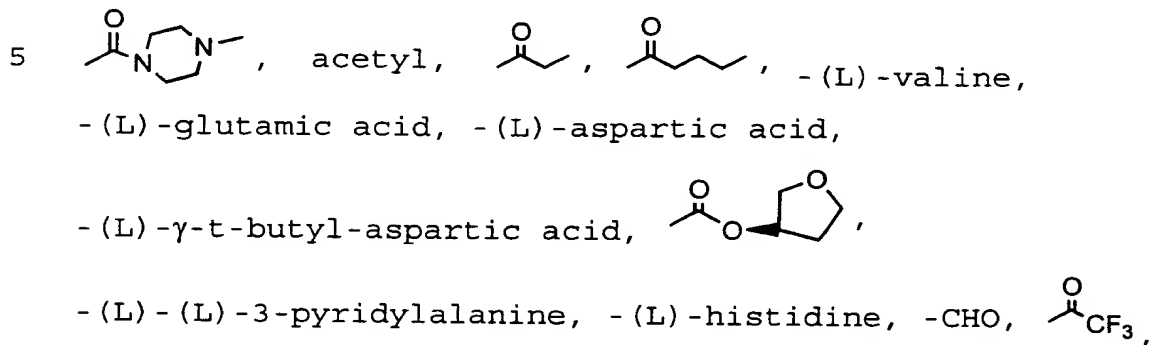
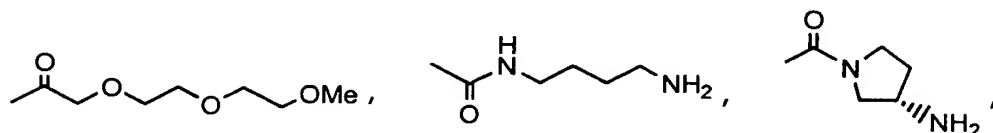
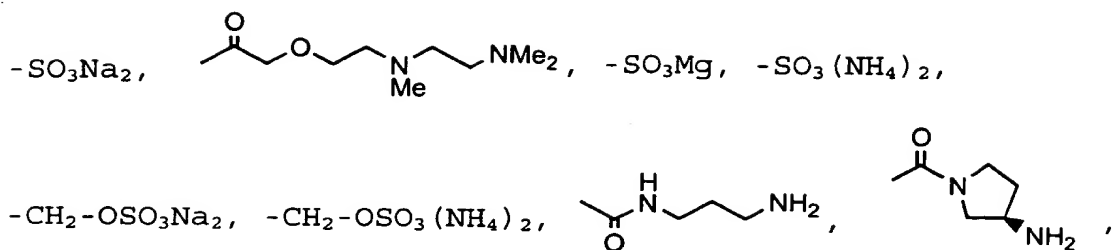
Sul  
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Cont



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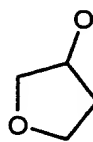
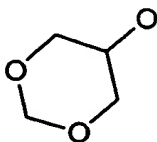
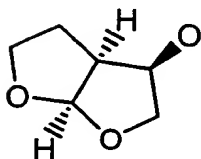
10 5. The compound according to claim 1, wherein at least one R<sup>7</sup> is selected from:





PO<sub>3</sub>-spermine, PO<sub>3</sub>-(spermidine)<sub>2</sub> or PO<sub>3</sub>-(meglamine)<sub>2</sub>.

- 15 6. The compound according to claim 1, wherein:  
 A is R'-C(O), wherein R' is selected from -C<sub>1</sub>-C<sub>6</sub> alkyl,

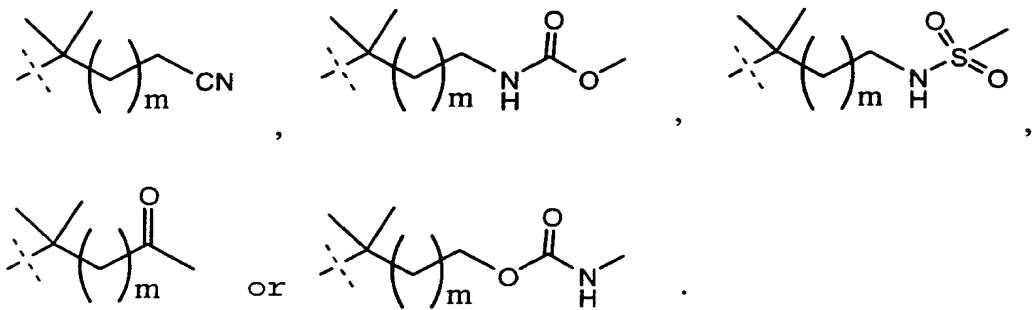




or

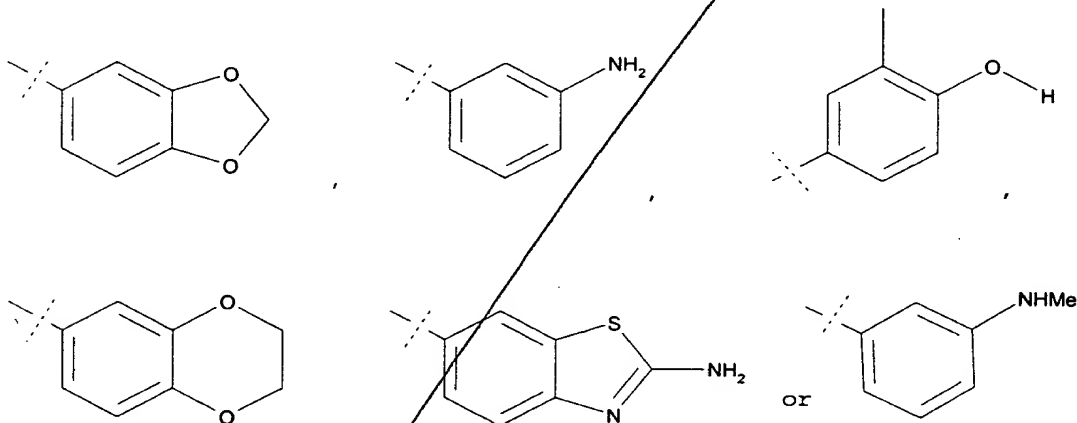
7. The compound according to claim 1, wherein:  
D' is  $-\text{CH}_2-\text{R}'$ , wherein R' is selected from:

5 isobutyl,



wherein m is 0 to 3.

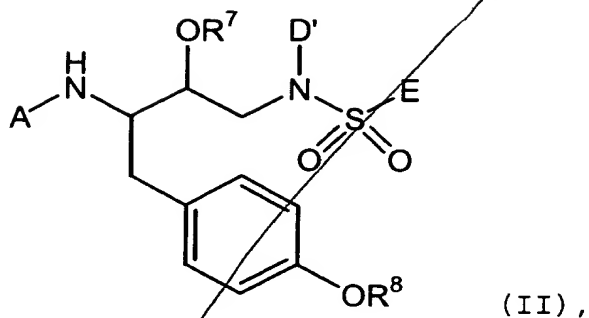
8. The compound according to claim 1, wherein:  
10 E is selected from:



9. The compound according to claim 1, having the  
formula (II):

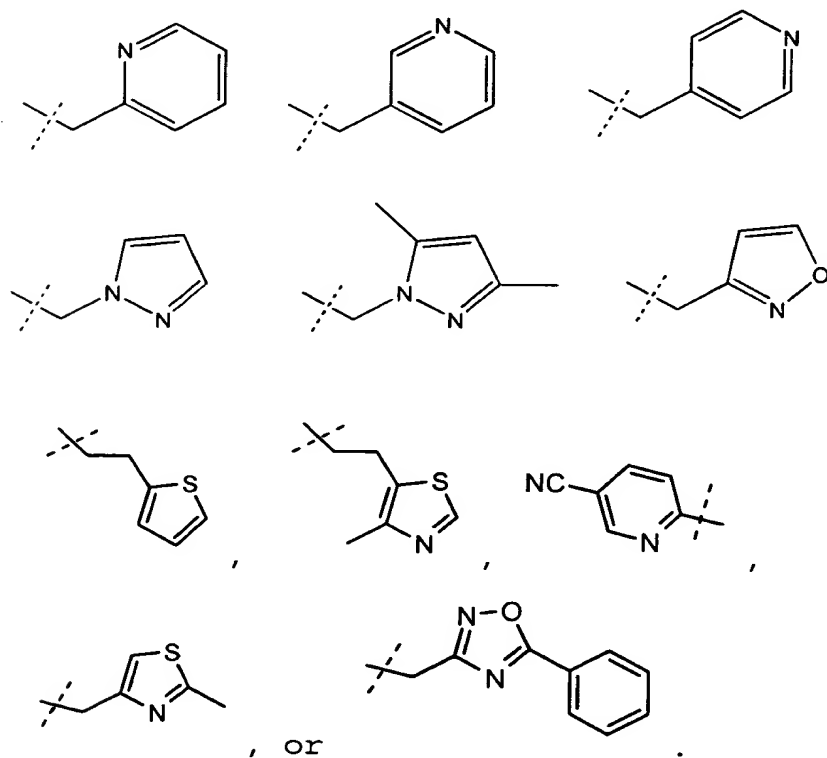
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wherein A, R<sup>7</sup>, D', R<sup>8</sup> and E are as defined in claim 1.

- 5      10. The compound according to claim 9, wherein R<sup>8</sup> is selected from:

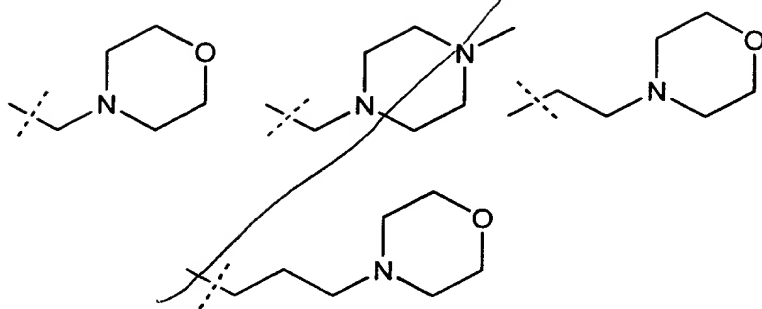


11. The compound according to claim 9, wherein R<sup>8</sup> is selected from:

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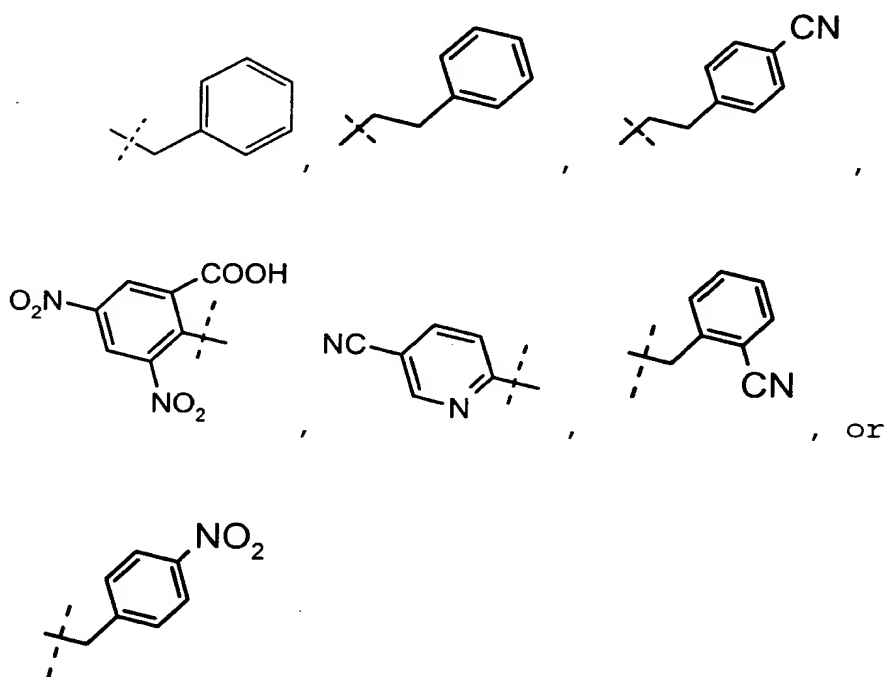
See  
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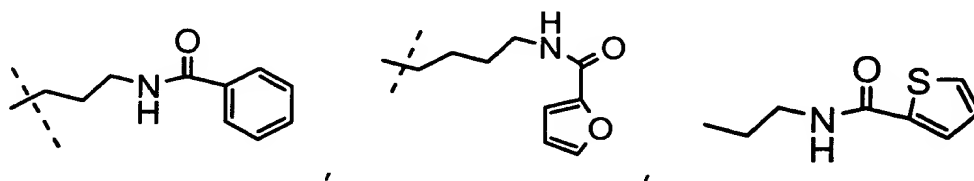
12. The compound according to claim 9, wherein  $R^8$  is selected from:

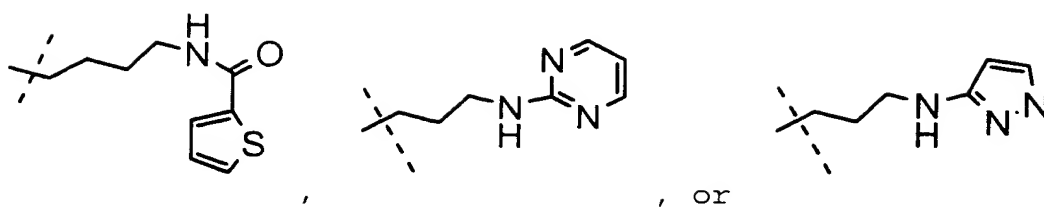
5



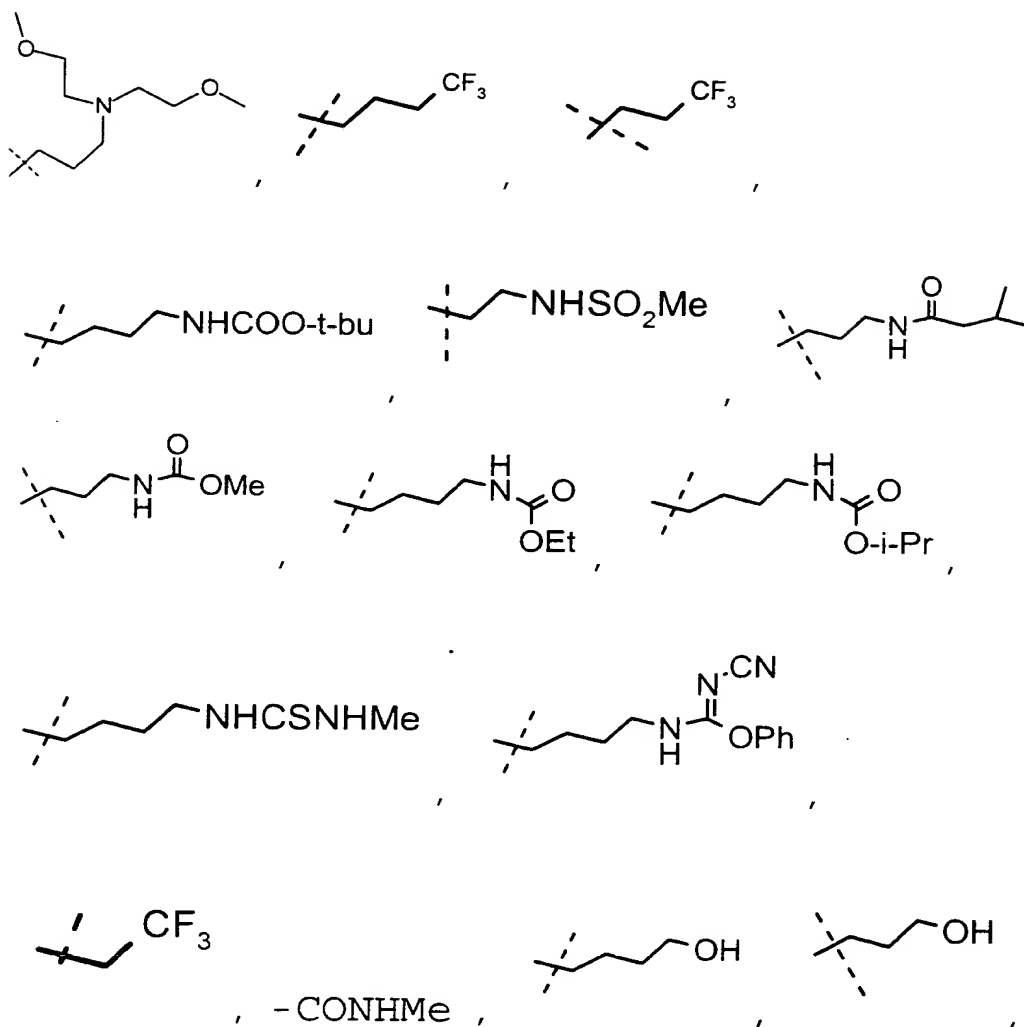
10

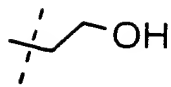
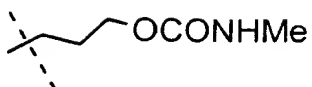
13. The compound according to claim 9, wherein  $R^8$  is selected from:





14. The compound according to claim 9, wherein R<sup>8</sup> is  
5 selected from:





, or

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5 15. The compound according to claim 9, wherein said compound is selected from compound numbers: 18, 19, 20, 22, 24, 25, 26, 27, 31, 33, 35, 36, 38, 41, 43, 48, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 68, 69, 71, 72, 73, 74, 202-204, 209, 213, 215, 217, 223, 227, 231, 233, 236, 237, 239, 243, 247, 250, 260, 263, 271, 281, 289, 293, 295, 304, 309, 317, 319, 320, 322, 334, 335, 348, 364, 367, 368, 375, 382, 383 and 396.

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15 16. The compound according to claim 15, wherein said compound is selected from compound numbers: 26, 27, 31, 33, 35, 36, 38, 41, 43, 48, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 69, 71, 72, 73, 74, 209, 215, 227, 233, 237, 281, 289, 295, 304, 309, 322, 335, 364, 368, 382 and 383.

20 17. The compound according to claim 16, wherein said compound is selected from: 54, 209, 237, 281, 295, 309, 367 and 368.

25 18. A composition comprising a compound according to any one of claims 1 to 17, in an amount sufficient to inhibit an aspartyl protease; and a pharmaceutically acceptable carrier.

30 19. The composition according to claim 18, wherein said composition is in a pharmaceutically acceptable form for administration to a human being.

20. The composition according to claim 18, wherein said composition additionally comprises an additional anti-viral agent.

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21. The composition according to claim 18, wherein said composition comprises at least one additional therapeutic agent selected from (1 alpha, 2 beta, 3 alpha)-9-[2,3-bis(hydroxymethyl)cyclobutyl]-guanine [(10) BHCG, SQ-34514]; oxetanocin-G (3,4-bis-(hydroxymethyl)-2-oxetanosyl]guanine); acyclic nucleosides, such as acyclovir, valaciclovir, famciclovir, ganciclovir or penciclovir; acyclic nucleoside phosphonates, such as (S)-1-(3-hydroxy-2-phosphonyl-methoxypropyl)cytosine (15) (HPMPC); ribonucleotide reductase inhibitors, such as 2-acetylpyridine 5-[(2-chloroanilino)thiocarbonyl]thiocarbonohydrazide, 3'-azido-3'-deoxythymidine; other 2',3'-dideoxynucleosides such as 2',3'-dideoxycytidine, 2',3'-dideoxyadenosine, 2',3'-dideoxyinosine, or 2',3'- (20) didehydrothymidine; other aspartyl protease inhibitors, such as indinavir, ritonavir, nelfinavir, or [3S-[3R\*(1R\*, 2S\*)]]-[3[[4-aminophenyl)sulfonyl](2-methylpropyl)amino]-2-hydroxy-1-(phenylmethyl)propyl]-tetrahydro-3-furanyl ester (amprenavir); oxathiolane (25) nucleoside analogues, such as (-)-cis-1-(2-hydroxymethyl)-1,3-oxathiolane 5-yl)-cytosine (lamivudine) or cis-1-(2-(hydroxymethyl)-1,3-oxathiolan-5-yl)-5-fluorocytosine (FTC); 3'-deoxy-3'-fluorothymidine; 5-chloro-2',3'-dideoxy-3'-fluorouridine; (30) (-)-cis-4-[2-amino-6-(cyclopropylamino)-9H-purin-9-yl]-2-cyclopentene-1-methanol; ribavirin; 9-[4-hydroxy-2-(hydroxymethyl)but-1-yl]-guanine (H2G); tat inhibitors,

such as 7-chloro-5-(2-pyrryl)-3H-1,4-benzodiazepin-2-(H)one (Ro5-3335) or 7-chloro-1,3-dihydro-5-(1H-pyrrol-2yl)-3H-1,4-benzodiazepin-2-amine (Ro24-7429);  
interferons, such as  $\alpha$ -interferon; renal excretion  
5 inhibitors such as probenecid; nucleoside transport inhibitors such as dipyridamole; pentoxifylline; N-acetylcysteine (NAC); Procysteine;  $\alpha$ -trichosanthin; phosphonoformic acid; immunomodulators, such as  
interleukin II or thymosin; granulocyte macrophage colony  
10 stimulating factors; erythropoetin; soluble CD<sub>4</sub> and genetically engineered derivatives thereof; non-nucleoside reverse transcriptase inhibitors (NNRTIs), such as nevirapine (BI-RG-587), loviride ( $\alpha$ -APA) or delavuridine (BHAP); phosphonoformic acid; 1,4-dihydro-  
15 2H-3,1-benzoxazin-2-ones NNRTIs, such as (-)-6-chloro-4-cyclopropylethynyl-4-trifluoromethyl-1,4-dihydro-2H-3,1-benzoxazin-2-one (L-743,726 or DMP-266); or quinoxaline NNRTIs, such as isopropyl (2S)-7-fluoro-3,4-dihydro-2-ethyl-3-oxo-1(2H)-quinoxalinecarboxylate (HBY1293).

20 22. The composition according to any one of claims 18-21, wherein said composition is in an orally available dosage form.

25 23. A method of treating a patient infected with a virus that depends upon an aspartyl protease for an obligatory event in its life cycle comprising the step of administering to said patient a composition according to claim 18.

30 24. A method of treating a patient infected with HIV-I or HIV-II comprising the step of administering to

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[illegible]

25. The method according to claim 23 or 24, comprising the additional step of administering to said patient an additional therapeutic agent selected from (1 alpha, 2 beta, 3 alpha)-9-[2,3-bis(hydroxymethyl)cyclobutyl]guanine ((-)BHCG, SQ-34514); oxetanocin-G (3,4-bis-(hydroxymethyl)-2-oxetanosyl]guanine); acyclic nucleosides, such as acyclovir, valaciclovir, famciclovir, ganciclovir or penciclovir; acyclic nucleoside phosphonates, such as (S)-1-(3-hydroxy-2-phosphonyl-methoxypropyl)cytosine (HPMPC); ribonucleotide reductase inhibitors, such as 2-acetylpyridine 5-[(2-chloroanilino)thiocarbonyl] thiocarbonohydrazone, 3'-azido-3'-deoxythymidine; other 2',3'-dideoxynucleosides such as 2',3'-dideoxycytidine, 2',3'-dideoxyadenosine, 2',3'-dideoxyinosine, or 2',3'-didehydrothymidine; other aspartyl protease inhibitors, such as indinavir, ritonavir, nelfinavir, or [3S-[3R\*(1R\*, 2S\*)]]-[3[[[4-aminophenyl)sulfonyl](2-methylpropyl)amino]-2-hydroxy-1-(phenylmethyl)propyl]-tetrahydro-3-furanyl ester (amprenavir); oxathiolane nucleoside analogues, such as (-)-cis-1-(2-hydroxymethyl)-1,3-oxathiolane 5-yl)-cytosine (lamivudine) or cis-1-(2-(hydroxymethyl)-1,3-oxathiolan-5-yl)-5-fluorocytosine (FTC); 3'-deoxy-3'-fluorothymidine; 5-chloro-2',3'-dideoxy-3'-fluorouridine; (-)-cis-4-[2-amino-6-(cyclopropylamino)-9H-purin-9-yl]-2-cyclopentene-1-methanol; ribavirin; 9-[4-hydroxy-2-(hydroxymethyl)but-1-yl]-guanine (H2G); tat inhibitors, such as 7-chloro-5-(2-pyrrolyl)-3H-1,4-benzodiazepin-2-(H)one (Ro5-3835) or 7-chloro-1,3-dihydro-5-(1H-pyrrol-2-yl)-3H-1,4-benzodiazepin-2-amine (Ro24-7429);



interferons, such as  $\alpha$ -interferon; renal excretion inhibitors such as probenecid; nucleoside transport inhibitors such as dipyridamole; pentoxifylline; N-acetylcysteine (NAC); Procysteine;  $\alpha$ -trichosanthin; 5 phosphonoformic acid; immunomodulators, such as interleukin II or thymosin; granulocyte macrophage colony stimulating factors; erythropoetin; soluble CD<sub>4</sub> and genetically engineered derivatives thereof; non-nucleoside reverse transcriptase inhibitors (NNRTIs), 10 such as nevirapine (BI-RG-587), zidovudine ( $\alpha$ -APA) or delaviridine (BHAP); phosphonoformic acid; 1,4-dihydro-2H-3,1-benzoxazin-2-ones NNRTIs, such as (-)-6-chloro-4-cyclopropylethynyl-4-trifluoromethyl-1,4-dihydro-2H-3,1-benzoxazin-2-one (L-743,726 or DMP-266); or quinoxaline 15 NNRTIs, such as isopropyl (2S)-7-fluoro-3,4-dihydro-2-ethyl-3-oxo-1(2H)-quinoxalinecarboxylate (HBY1293), wherein said additional agent is administered to said patient as either a separate dosage form or as a single dosage form together with said compound.

20

26. A method of treating a patient diagnosed with AIDS; AIDS related complex (ARC); progressive generalized lymphadenopathy (PGL); Kaposi's sarcoma, thrombocytopenic purpura; AIDS-related neurological conditions such as 25 AIDS dementia complex, multiple sclerosis or tropical paraperesis; anti-HIV antibody-positive conditions; or HIV-positive conditions, comprising the step of administering to said patient a composition according to claim 18.

30

27. The method according to claim 26, comprising the additional step of administering to said patient an

additional therapeutic agent selected from (1 alpha, 2  
beta, 3 alpha)-9-[2,3-bis(hydroxymethyl)  
cyclobutyl]guanine [(-)BHCG, SQ-34514]; oxetanocin-G  
(3,4-bis-(hydroxymethyl)-2-oxetanosyl]guanine); acyclic  
5 nucleosides, such as acyclovir, valaciclovir,  
famciclovir, ganciclovir or penciclovir; acyclic  
nucleoside phosphonates, such as (S)-1-(3-hydroxy-2-  
phosphonyl-methoxypropyl)cytosine (HPMPC); ribonucleotide  
reductase inhibitors, such as 2-acetylpyridine 5-[(2-  
10 chloroanilino)thiocarbonyl] thiocarbonohydrazone,  
3'-azido-3'-deoxythymidine; other 2',3'-dideoxynucleosides  
such as 2',3'-dideoxycytidine, 2',3'-dideoxyadenosine,  
2',3'-dideoxyinosine, or 2',3'-didehydrothymidine; other  
aspartyl protease inhibitors, such as indinavir,  
15 ritonavir, nelfinavir, or [3S-[3R\*(1R\*, 2S\*)]]-[3[[[4-  
aminophenyl)sulfonyl](2-methylpropyl)amino]-2-hydroxy-1-  
(phenylmethyl)propyl]-tetrahydro-3-furanyl ester  
(amprenavir); oxathiolane nucleoside analogues, such as  
(-)-cis-1-(2-hydroxymethyl)-1,3-oxathiolane 5-yl)-  
20 cytosine (lamivudine) or cis-1-(2-(hydroxymethyl)-1,3-  
oxathiolan-5-yl)-5-fluorocytosine (FTC); 3'-deoxy-3'-  
fluorothymidine; 5-chloro-2',3'-dideoxy-3'-fluorouridine;  
(-)-cis-4-[2-amino-6-(cyclopropylamino)-9H-purin-9-yl]-2-  
cyclopentene-1-methanol; ribavirin; 9-[4-hydroxy-2-  
25 (hydroxymethyl)but-1-yl]-guanine (H2G); tat inhibitors,  
such as 7-chloro-5-(2-pyrrolyl)-3H-1,4-benzodiazepin-2-  
(H)one (Ro5-3335) or 7-chloro-1,3-dihydro-5-(1H-pyrrol-  
2-yl)-3H-1,4-benzodiazepin-2-amine (Ro24-7429);  
interferons, such as  $\alpha$ -interferon; renal excretion  
30 inhibitors such as probenecid; nucleoside transport  
inhibitors such as dipyridamole; pentoxifylline; N-  
acetylcysteine (NAC); Procysteine;  $\alpha$ -trichosanthin;

phosphonoformic acid; immunomodulators, such as interleukin II or thymosin; granulocyte macrophage colony stimulating factors; erythropoietin; soluble CD<sub>4</sub> and genetically engineered derivatives thereof; non-  
5 nucleoside reverse transcriptase inhibitors (NNRTIs), such as nevirapine (BI-RG-587), zidovudine (α -APA) or delaviridine (BHAP); phosphonoformic acid; 1,4-dihydro-2H-3,1-benzoxazin-2-ones NNRTIs, such as (-)-6-chloro-4-cyclopropylethynyl-4-trifluoromethyl-1,4-dihydro-2H-3,1-  
10 benzoxazin-2-one (L-743,726 or DMP-266); or quinoxaline NNRTIs, such as isopropyl (2S)-7-fluoro-3,4-dihydro-2-ethyl-3-oxo-1(2H)-quinoxalinecarboxylate (HBY1293), wherein said additional agent is administered to said patient as either a separate dosage form or as a single  
15 dosage form together with said compound.

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